

Clearing Permit Decision Report

1. Application details and outcome

1.1. Permit application details

Permit number:	8549/4
Permit type:	Purpose Permit
Applicant name:	Evolution Mining (Mungari) Pty Ltd
Application received:	31 July 2024
Application area:	250 hectares
Purpose of clearing:	Mineral production and haul road
Method of clearing:	Mechanical Removal
Tenure:	Mining Lease 15/829 Mining Lease 15/1827 Miscellaneous Licence 15/387
Location (LGA area/s):	Shire of Coolgardie
Colloquial name:	Cutters Ridge

1.2. Description of clearing activities

Evolution Mining (Mungari) Pty Ltd proposes to clear up to 250 hectares of native vegetation within a boundary of approximately 476 hectares, for the purpose of mineral production and haul road.

Clearing permit CPS 8549/1 was granted by the Department of Mines, Industry Regulation and Safety (now the Department of Energy, Mines, Industry Regulation and Safety) on 28 November 2019 and was valid from 21 December 2019 to 20 December 2024. The permit authorised the clearing of up to 86.5 hectares of native vegetation within a boundary of approximately 235.296 hectares, for the purpose of mineral production and haul road.

CPS 8549/2 was granted on 14 May 2020, amending the permit to increase the amount of clearing authorised to 116.2 hectares, and increase the permit boundary to 250.2 hectares.

CPS 8549/3 was granted on 8 October 2020, amending the permit to increase the amount of clearing authorised to 250 hectares, and increase the permit boundary to 476 hectares.

On 31 July 2024, the Permit Holder applied to amend CPS 8549/3 to extend the permit duration by five years until 20 December 2029.

1.3. Decision on application and key considerations

Decision:	Grant
Decision date:	29 November 2024
Decision area:	250 hectares of native vegetation

1.4. Reasons for decision

This clearing permit application was made in accordance with section 51KA and 51O of the *Environmental Protection Act 1986* (EP Act) and was received by the Department of Energy, Mines, Industry Regulation and Safety (DMIRS) on 31 July 2024. DMIRS advertised the application for public comment for a period of 7 days, and no submissions were received.

In making this decision, the Delegated Officer had regard for the site characteristics, relevant datasets, supporting information provided by the applicant including the results of a flora and vegetation survey and fauna survey, the clearing principles set out in Schedule 5 of the EP Act, and any other matters considered relevant to the assessment.

The assessment has not changed since the assessment for CPS 8594/3. After consideration of the available information, as well as the applicant's minimisation and mitigation measures, the Delegated Officer determined that the proposed amendment to extend the duration of the permit is not likely to lead to an unacceptable risk to the environment. The Delegated Officer decided to grant a clearing permit with the existing permit conditions.

1.5. Site map

A site map of proposed clearing is provided in Figure 1 below.



Figure 1. Map of the application area. The yellow area indicates the area within which conditional authorised clearing can occur under the granted clearing permit. The red area indicates the area within which clearing is unauthorised.

2. Assessment of application

2.1. Avoidance and mitigation measures

The applicant has advised that disturbance works have been sited such that key environmental values are avoided, or impact reduced to be as low as reasonably practical. Clearing will be conducted on an 'as required' basis and survey pickups will be carried out before and after clearing (Evolution Mining, 2024).

The applicant adequately demonstrated that reasonable efforts had been taken to avoid and minimise potential impacts of the clearing on environmental values.

2.2. Assessment of impacts on environmental values

The latest annual clearing report indicates that as of 30 June 2024, 129.6 hectares have been cleared under CPS 8549/3 and previous versions of the permit. The assessment against the ten clearing principles identified that the native vegetation proposed to be cleared may provide habitat for conservation significant flora. Two Priority flora species (*Calandrinia lefroyensis* (P1) and *Allocasuarina eriochlamys* subsp. *grossa* (P3)) have been identified inside the application area. Spectrum Ecology conducted a targeted search which identified 253 individuals from three local populations and confirmed the identity of the species as *C. lefroyensis* (Spectrum Ecology, 2019). Two of the local populations will not be impacted by the proposed clearing, with the proposed haul road dissecting the third population. Ten individuals were recorded within the application area, representing four per cent of the total plants recorded and 10 per cent of the population dissected by the haul road (Spectrum Ecology, 2019). The proposed clearing is unlikely to have a significant impact on the local population of *C. lefroyensis*. Impacts to *A. eriochlamys* subsp. *grossa* will continue to be mitigated by including an unauthorised clearing area around the recorded population (see section 1.5). Flora species *Austrostipa blackii* which is present in the application area was previously listed as a Priority flora but has now been delisted.

The assessment against the ten clearing principles identified that the native vegetation proposed to be cleared may provide habitat for conservation significant fauna. Only one conservation significant fauna species (malleefowl (VU)) was recorded during the field survey conducted by Phoenix Environmental Sciences (2019a). Suitable foraging habitat for malleefowl was recorded throughout the majority of the application area, particularly in open woodland and shrubland habitats. Nesting habitat was sparse within the application area but the species may nest in areas of adjacent suitable habitat, which was observed outside of the application area, and occasionally forage within it. Potential impacts to malleefowl as a result of the proposed clearing may be minimised by the continued implementation of a fauna management condition.

The application area does not contain, or form a part of a Threatened or Priority Ecological Community. The amendment area contains minor drainage lines (GIS Database). The salt lake habitat is no longer part of the application area. Drainage lines in the region are dry for most of the year, only flowing briefly immediately following significant rainfall. Potential impacts to vegetation growing in association with watercourses may be minimised by the continued implementation of a watercourse management condition. At the bioregion (Coolgardie) and local scale, over 97 per cent of the pre-European vegetation extent remains (Government of Western Australia, 2019). The nearest conservation area is located over 11 kilometres southeast of the application

area and the proposed clearing is not likely to impact on the environmental values of this area. The proposed clearing is not likely to lead to appreciable land degradation or impacts surface water quality, groundwater quality or lead to increase in flooding.

Based on the above, the proposed clearing is at variance with principle (f), may be at variance to principles (a) and (b) and is not likely to be at variance with the remaining clearing principles.

The vegetation associations, fauna habitats and landform types present within the permit area, are well represented in surrounding areas and the region remains largely uncleared (Phoenix, 2019a, 2019b; Spectrum Ecology, 2019; GIS Database). The requested extension of duration is unlikely to result any significant change to the environmental impacts of the proposed clearing.

The amendment application has been assessed against the clearing principles, planning instruments and other matters in accordance with s.51O of the *Environmental Protection Act 1986*. Environmental information has been reviewed, and the assessment of the proposed clearing against the clearing principles remains consistent with the assessment contained in decision report CPS 8549/3 and previous versions of the decision report.

2.3. Relevant planning instruments and other matters

The clearing permit amendment application was advertised on 8 November 2024 by the Department of Energy, Mines, Industry Regulation and Safety inviting submissions from the public. No submissions were received in relation to this application.

There is one native title claim (WC2017/007) over the area under application (DPLH, 2024). This claim has been registered with the National Native Title Tribunal on behalf of the claimant group (MARLINYU GHOORLIE). However, the mining tenure has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore, the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

There are no registered Aboriginal Sites of Significance within the application area (DPLH, 2024). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

It is noted that the proposed clearing may impact on malleefowl, which is a protected matter under the *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act). The proponent may be required to refer the project to the (Federal) Department of Climate Change, Environment and Water for environmental impact assessment under the EPBC Act. The proponent is advised to contact the Department of Climate Change, Energy, the Environment and Water and the Environment for further information regarding notification and referral responsibilities under the EPBC Act.

Other relevant authorisations required for the proposed land use include:

- A Mining Proposal / Mine Closure Plan approved under the *Mining Act 1978*.

It is the proponent's responsibility to liaise with the Department of Water and Environmental Regulation and the Department of Biodiversity, Conservation and Attractions, to determine whether a Works Approval, Water Licence, Bed and Banks Permit, or any other licences or approvals are required for the proposed works.

Appendix A. Site characteristics

A.1. Site characteristics

Characteristic	Details
Local context	The area proposed to be cleared is part of an expansive tract of native vegetation in the extensive land use zone of Western Australia. It is surrounded by the Cutters Ridge mining development and the Coolgardie bioregion (GIS Database).
Ecological linkage	According to aerial imagery, the application area does not form part of any formal or informal ecological linkages (GIS Database).
Conservation areas	The application area does not form part of any known or mapped conservation areas. The closest mapped conservation area is Kurrawang Nature Reserve located over 11 kilometres south east of the application area (GIS Database).
Vegetation description	The vegetation of the application area is broadly mapped as the following Beard vegetation associations: 9: Wheatbelt; York gum, salmon gum etc. <i>Eucalyptus loxophleba</i> , <i>E. salmonophloia</i> . Goldfields; gimlet, redwood etc. <i>E. salubris</i> , <i>E. oleosa</i> . Riverine; rivergum <i>E. camaldulensis</i> . Tropical; messmate, woolyb; and 540: Mulga, other wattle, casuarina <i>Atriplex</i> spp. <i>Maireana</i> spp. with <i>Acacia aneura</i> , <i>A. papyrocarpa</i> , <i>Allocasuarina cristata</i> (GIS Database). A flora and vegetation survey was conducted over the application area by Phoenix Environmental Sciences Pty Ltd during June and October, 2018. The following vegetation associations were recorded within the application area (Phoenix, 2019b):

Characteristic	Details
	<ul style="list-style-type: none"> • AbDIPO: Tall <i>Acacia burkittii</i> shrubland over sparse to open mid <i>Dodonaea lobulata</i>, <i>Acacia tetragonophylla</i> and <i>Eremophila oldfieldii</i> shrubland over isolated low <i>Ptilotus obovatus</i>, <i>Scaevola spinescens</i> and <i>Olearia pimelioides</i> shrubs. • CpEsEd: Isolated low <i>Casuarina pauper</i> trees over mid open <i>Eremophila scoparia</i>, <i>Dodonaea viscosa</i> and <i>Rhagodia drummondii</i> shrubland over isolated low shrubs to low open <i>Eremophila decipiens</i> subsp. <i>decipiens</i>, <i>Ptilotus obovatus</i> and <i>Enchylaena tomentosa</i> shrubland. • CsAvDc: Isolated mid <i>Cratystylis subspinescens</i>, <i>Pimelea microcephala</i> and <i>Senna artemisioides</i> subsp. <i>filifolia</i> shrubs over low <i>Atriplex vesicaria</i>, <i>Tecticornia</i> sp. (sterile 1) and <i>Roycea divaricata</i> shrubland over isolated low <i>Disphyma crassifolium</i>, <i>Brachyscome ciliaris</i> and <i>Vittadinia dissecta</i> var. <i>hirta</i> forbs. • EcDIOM: Mid <i>Eucalyptus clelandiorum</i> woodland with other <i>Eucalyptus</i> trees, frequently <i>E. celastroides</i> subsp. <i>celastroides</i> or <i>E. griffithsii</i>, over isolated shrubs to mid open <i>Dodonaea lobulata</i>, <i>Eremophila scoparia</i> and <i>Exocarpos aphyllus</i> shrubland over isolated low to sparse <i>Olearia muelleri</i>, <i>Ptilotus obovatus</i> and <i>Westringia rigida</i> shrubland. • EcEsOm: Mid <i>Eucalyptus clelandiorum</i> and <i>E. oleosa</i> subsp. <i>oleosa</i> woodland over isolated mid <i>Eremophila scoparia</i>, <i>Exocarpos aphyllus</i> and <i>Senna artemisioides</i> subsp. <i>filifolia</i> shrubs to open shrubland over isolated low <i>Olearia muelleri</i>, <i>Ptilotus obovatus</i> and <i>Westringia rigida</i> shrubs to low pen shrubland. • EgAhOm: Mid <i>Eucalyptus griffithsii</i> woodland with other <i>Eucalyptus</i> trees including <i>E. oleosa</i> subsp. <i>oleosa</i> and <i>E. longicornis</i> over isolated shrubs to mid open <i>Acacia hemiteles</i>, <i>Exocarpos aphyllus</i> and <i>Senna artemisioides</i> subsp. <i>filifolia</i> shrubland over isolated low <i>Olearia muelleri</i>, <i>Scaevola spinescens</i> and <i>Westringia rigida</i> shrubs. • EIEaAv: Mid <i>Eucalyptus longicornis</i> woodland with <i>E. clelandiorum</i> and <i>E. griffithsii</i> trees over mid to tall open <i>Exocarpos aphyllus</i>, <i>Eremophila glabra</i> and <i>Senna artemisioides</i> subsp. <i>filifolia</i> shrubland over isolated low <i>Atriplex vesicaria</i>, <i>Ptilotus obovatus</i> and <i>Rhagodia drummondii</i> shrubs. • EsEsAb: Mid <i>Eucalyptus salmonophloia</i> and <i>E. salubris</i> woodland over mid <i>Eremophila scoparia</i>, <i>Senna artemisioides</i> subsp. <i>filifolia</i> and <i>Exocarpos aphyllus</i> shrubland over low open <i>Atriplex bunburyana</i>, <i>Maireana trichoptera</i> and <i>Ptilotus obovatus</i> shrubland. • EtEsOm: Mid <i>Eucalyptus transcontinentalis</i> woodland with other <i>Eucalyptus</i> trees frequently <i>E. clelandiorum</i> and <i>E. salubris</i> over mid open <i>Atriplex nummularia</i>, <i>Eremophila scoparia</i> and <i>Senna artemisioides</i> subsp. <i>filifolia</i> shrubland over isolated low <i>Olearia muelleri</i>, <i>Eremophila parvifolia</i> subsp. <i>auricampa</i> and <i>Ptilotus obovatus</i> shrubs. • MhTiDc: Isolated tall <i>Melaleuca halmatororum</i> and <i>Grevillea sarissa</i> subsp. <i>sarissa</i> shrubs over low <i>Tecticornia indica</i> subsp. <i>bidens</i>, <i>T. doliiformis</i> and <i>T. pruinosa</i> chenopod shrubland over isolated low <i>Disphyma crassifolium</i>, <i>Calandrinia ?quartzitica</i> and <i>Sclerolaena</i> spp. forbs. • Tecticornia spp. shrublands (Tp, TuEd, Tu, Ts, Ti, Td, TpDcEp, AvDc): mapped as a mosaic. • Tp: Isolated low shrubs to low <i>Tecticornia pergranulata</i> subsp. <i>pergranulata</i> and <i>T. doliiformis</i> chenopod shrubland. • TuEd: Low <i>Tecticornia undulata</i>, <i>Atriplex lindleyi</i> subsp. <i>inflata</i> and <i>Frankenia irregularis</i> shrubland over low isolated <i>Eragrostis dielsii</i> grasses. • Tu: Low <i>Tecticornia undulata</i>, <i>T. sp.</i> Denny's Crossing and <i>T. doliiformis</i> chenopod shrubland. • Ts: Low <i>Tecticornia sp.</i> Denny's crossing shrubland over low sparse <i>Disphyma crassifolium</i> and <i>Surreya diandra</i> forbland over isolated low <i>Eragrostis dielsii</i> grasses. • Ti: Low <i>Tecticornia indica</i> subsp. <i>bidens</i>, <i>T. sp.</i> Denny's crossing and <i>Atriplex ?vesicaria</i> shrubland over isolated <i>Disphyma crassifolium</i>, <i>Erodium cicutarium</i> and <i>Surreya diandra</i> forbs and low isolated clumps of <i>Eragrostis dielsii</i> grasses. • Td: Low <i>Tecticornia doliiformis</i> shrubland over isolated clumps of low <i>Disphyma crassifolium</i>, <i>Heliotropium curassavicum</i> and <i>Senecio pinnatifolius</i> var. <i>pinnatifolius</i> forbs and isolated clumps of low <i>Eragrostis dielsii</i> grasses. • TpdcEp: Low <i>Tecticornia pruinosa</i> chenopod shrubland over <i>Disphyma crassifolium</i>, <i>Surreya diandra</i> and <i>Senecio pinnatifolius</i> var. <i>pinnatifolius</i> forbs over low open <i>Eragrostis dielsii</i> and <i>E. pergracilis</i> grassland. • AvDc: Low open <i>Atriplex vesicaria</i>, <i>Gunnipopsis quadrifida</i> and <i>Tecticornia disarticulata</i> shrubland over isolated clumps of low <i>Disphyma crassifolium</i>, <i>Surreya diandra</i> and <i>Asteridea chaetopoda</i> forbs.
Vegetation condition	<p>The vegetation survey (Phoenix, 2019b) and aerial imagery indicate the vegetation within the proposed clearing area is in Pristine to Completely Degraded (Trudgen, 1991) condition.</p> <p>The full Trudgen (1991) condition rating scale is provided in Appendix A.</p>
Climate and landform	The application area is located in an arid zone of Western Australia with an annual average rainfall (Coolgardie) 270.7 millimetres (BoM, 2024).
Soil description	The soil within the application area is mapped as soil units BB5, SV15, and Mx43. These soil units are described as follows (Northcote et al., 1960-68):

Characteristic	Details
	<ul style="list-style-type: none"> • BB5: Rocky ranges and hills of greenstones--basic igneous rocks: chief soils seem to be shallow calcareous loamy soils, with shallow brown and grey-brown calcareous earths below which weathered rock occurs at shallow depths. Associated soils are not described. • SV15: Salt lakes and their associated areas: common soils are gypseous and saline loams together with gypseous and saline soils on the lake beds. Associated are sandy red earths on lunettes; clayey gravel soils on plains; clay soils on eroded plains; and small areas of hard soils on clay pans. • Mx43: Gently undulating valley plains and pediments; some outcrop of basic rock: chief soils are alkaline red earths with limestone or limestone nodules at shallow depth on gently sloping slightly concave plains with low gentle rises of clayey gravel soils.
Land degradation risk	The application area lies within the Coolgardie land system (DPIRD, 2019). The Coolgardie land system is described as uplands and undulating plains with ultramafic greenstones supporting eucalypt woodlands and halophytic shrublands (DPIRD, 2019). There are very gently inclined footslopes and gently undulating plains with pebble mantle. Where not protected by a stoney mantle, the lower footslopes and lower alluvial tracts are susceptible to water erosion, particularly when the perennial vegetation cover is removed or reduced (DPIRD, 2019).
Waterbodies	The desktop assessment and aerial imagery indicated that no watercourses transect the area proposed to be cleared (GIS Database).
Hydrogeography	The application area falls within the Goldfields Groundwater Area, which is legislated by the RIWI Act 1914. The mapped groundwater salinity within the application area is of 14,000-35,000 milligrams per litre total dissolved solids which is described as saline (GIS Database).
Flora	Two Priority flora species were recorded in the application area (Phoenix, 2019b; Spectrum Ecology, 2019). Other Priority flora species have been identified outside of the application area (GIS Database).
Ecological communities	The application area does not form part of any known or mapped Threatened or Priority Ecological Communities (GIS Database).
Fauna	There were no conservation significant fauna species recorded in the application area (Phoenix, 2019a; GIS Database). The field fauna survey recorded two direct sightings of malleefowl, the closest one was recorded 0.86 kilometres from the application area (Phoenix, 2019a).
Fauna habitat	<p>Four broad fauna habitats were identified within the application area, open eucalypt woodland, shrubland, and chenopod shrubland. These habitats are described below (Phoenix, 2019a).</p> <p>Open Eucalypt Woodland: Structure and species diversity often variable, though often comprising of scattered eucalypts over mixed large shrubs, when present, over mixed small to medium shrubs, and occasionally sparse grasses on clay loam to gravelly clay loam substrate.</p> <p>Shrubland: Consisting of a mosaic of differing structures and density, shrubland comprised of mixed shrub species, often dominated by <i>Acacia</i> and/or <i>Casuarina</i> species, with density ranging from open shrubland to scattered sparse areas of dense vegetation with understorey ranging between areas of open to dense medium to tall shrub cover on clay loam to gravelly clay loam substrate.</p> <p>Chenopod Shrubland: Dominated by <i>Tecticornia</i> species with height and density variable, though often low and open. Occasionally with scattered isolated individual or small patches of small to medium shrubs on clay loam substrates. Often on low lying plain areas that are inundated following rainfall events. Some areas, particularly close to edges of salt lakes, inundated at time of field survey.</p>

Appendix B. Vegetation condition rating scale

Vegetation condition is a rating given to a defined area of vegetation to categorise and rank disturbance related to human activities. The rating refers to the degree of change in the vegetation structure, density and species present in relation to undisturbed vegetation of the same type. The degree of disturbance impacts upon the vegetation's ability to regenerate. Disturbance at a site can be a cumulative effect from a number of interacting disturbance types.

Considering its location, the scale below was used to measure the condition of the vegetation proposed to be cleared. This scale has been extracted from Keighery, B.J. (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc). Nedlands, Western Australia.

Measuring vegetation condition for the South West and Interzone Botanical Province (Keighery, 1994)

Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, with disturbance affecting individual species; weeds are non-aggressive species.

Condition	Description
Very good	Vegetation structure altered, with obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and/or grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and/or grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and/or grazing.
Completely degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

Appendix C. References and databases

1. GIS datasets

Publicly available GIS Databases used (sourced from www.data.wa.gov.au):

- Aboriginal Heritage Places (DPLH-001)
- Cadastre Address (LGATE-002)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Environmentally Sensitive Areas (DWER-046)
- IBRA Vegetation Statistics
- Regional Parks (DBCA-026)

Restricted GIS Databases used:

- ICMS (Incident Complaints Management System) – Points and Polygons
- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)
- Threatened Fauna
- Threatened Ecological Communities and Priority Ecological Communities
- Threatened Ecological Communities and Priority Ecological Communities (Buffers)

2. References

Evolution Mining (Mungari) Pty Ltd (Evolution Mining) (2024) Amendment clearing permit application form, CPS 8549/4, received 31 July 2024.

Bureau of Meteorology (BoM) (2024) Bureau of Meteorology Website – Climate Data Online, Coolgardie Station. Bureau of Meteorology. <https://reg.bom.gov.au/climate/data/> (Accessed 7 November 2024).

Department of Planning, Lands and Heritage (DPLH) (2024) Aboriginal Cultural Heritage Inquiry System. Department of Planning, Lands and Heritage. <https://espatial.dplh.wa.gov.au/ACHIS/index.html?viewer=ACHIS> (Accessed 12 November 2024).

Department of Primary Industries and Regional Development (DPIRD) (2019) Advice received in relation to Clearing Permit Application CPS 8549/1. Office of the Commissioner of Soil and Land Conservation, Department of Primary Industries and Regional Development, Western Australia, July 2019.

Government of Western Australia (2019) 2018 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of March 2019. WA Department of Biodiversity, Conservation and Attractions. <https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics>

Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.

Northcote, K. H. with Beckmann G G, Bettenay E., Churchward H. M., van Dijk D. C., Dimmock G. M., Hubble G. D., Isbell R. F., McArthur W. M., Murtha G. G., Nicolls K. D., Paton T. R., Thompson C. H., Webb A. A. and Wright M. J. (1960-68) Atlas of Australian Soils, Sheets 1 to 10, with explanatory data. CSIRO and Melbourne University Press: Melbourne.

Phoenix Environmental Sciences (Phoenix) (2019a) Fauna survey for Mungari Gold Operations Cutters Ridge Project. Report prepared for Evolution Mining Ltd, February 2019.

Phoenix Environmental Sciences (Phoenix) (2019b) Flora and vegetation survey for Mungari Gold Operations Cutters Ridge Project. Report prepared for Evolution Mining Ltd, May 2019.

Spectrum Ecology (2019) Cutters Ridge Haul Road *Calandrinia* Targeted Flora Survey Memorandum.

Western Australian Herbarium (1998-) FloraBase - the Western Australian Flora. Department of Biodiversity, Conservation and Attractions, Western Australia. <https://florabase.dpaw.wa.gov.au/> (Accessed 13 November 2024).

3. Glossary

Acronyms:

BC Act	<i>Biodiversity Conservation Act 2016</i> , Western Australia
BoM	Bureau of Meteorology, Australian Government
DAA	Department of Aboriginal Affairs, Western Australia (now DPLH)
DAFWA	Department of Agriculture and Food, Western Australia (now DPIRD)
DAWE	Department of Agriculture, Water and the Environment, Australian Government
DBCA	Department of Biodiversity, Conservation and Attractions, Western Australia
DEMIRS	Department of Energy, Mines, Industry Regulation and Safety
DER	Department of Environment Regulation, Western Australia (now DWER)
DMIRS	Department of Mines, Industry Regulation and Safety, Western Australia (now DEMIRS)
DMP	Department of Mines and Petroleum, Western Australia (now DEMIRS)
DoEE	Department of the Environment and Energy (now DAWE)
DoW	Department of Water, Western Australia (now DWER)
DPaW	Department of Parks and Wildlife, Western Australia (now DBCA)
DPIRD	Department of Primary Industries and Regional Development, Western Australia
DPLH	Department of Planning, Lands and Heritage, Western Australia
DRF	Declared Rare Flora (now known as Threatened Flora)
DWER	Department of Water and Environmental Regulation, Western Australia
EP Act	<i>Environmental Protection Act 1986</i> , Western Australia
EPA	Environmental Protection Authority, Western Australia
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Federal Act)
GIS	Geographical Information System
ha	Hectare (10,000 square metres)
IBRA	Interim Biogeographic Regionalisation for Australia
IUCN	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
PEC	Priority Ecological Community, Western Australia
RIWI Act	<i>Rights in Water and Irrigation Act 1914</i> , Western Australia
TEC	Threatened Ecological Community

Definitions:

{**DBCA (2019) Conservation Codes for Western Australian Flora and Fauna. Department of Biodiversity, Conservation and Attractions, Western Australia**}:-

T **Threatened species:**

Listed by order of the Minister as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1), or is a rediscovered species to be regarded as threatened species under section 26(2) of the *Biodiversity Conservation Act 2016* (BC Act).

Threatened fauna is that subset of 'Specially Protected Fauna' listed under schedules 1 to 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for Threatened Fauna.

Threatened flora is that subset of 'Rare Flora' listed under schedules 1 to 3 of the *Wildlife Conservation (Rare Flora) Notice 2018* for Threatened Flora.

The assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria as detailed below.

CR **Critically endangered species**

Threatened species considered to be "facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines".

Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines. Published under schedule 1 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for critically endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for critically endangered flora.

EN Endangered species

Threatened species considered to be “*facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines*”.

Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines. Published under schedule 2 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for endangered flora.

VU Vulnerable species

Threatened species considered to be “*facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines*”.

Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines. Published under schedule 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for vulnerable fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for vulnerable flora.

Extinct Species:

EX Extinct species

Species where “*there is no reasonable doubt that the last member of the species has died*”, and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act).

Published as presumed extinct under schedule 4 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for extinct fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for extinct flora.

EW Extinct in the wild species

Species that “*is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form*”, and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act).

Currently there are no threatened fauna or threatened flora species listed as extinct in the wild. If listing of a species as extinct in the wild occurs, then a schedule will be added to the applicable notice.

Specially protected species:

Listed by order of the Minister as specially protected under section 13(1) of the BC Act. Meeting one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection.

Species that are listed as threatened species (critically endangered, endangered or vulnerable) or extinct species under the BC Act cannot also be listed as Specially Protected species.

MI Migratory species

Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act).

Includes birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and fauna subject to the *Convention on the Conservation of Migratory Species of Wild Animals* (Bonn Convention), an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals, that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species.

Published as migratory birds protected under an international agreement under schedule 5 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

CD **Species of special conservation interest (conservation dependent fauna)**
Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act).

Published as conservation dependent fauna under schedule 6 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

OS **Other specially protected species**
Fauna otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act).

Published as other specially protected fauna under schedule 7 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

P **Priority species:**

Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened fauna or flora.

Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring.

Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.

P1 **Priority One - Poorly-known species**
Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.

P2 **Priority Two - Poorly-known species**
Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.

P3 **Priority Three - Poorly-known species**
Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.

P4 **Priority Four - Rare, Near Threatened and other species in need of monitoring**
(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands.
(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as Conservation Dependent.

(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

Principles for clearing native vegetation:

- (a) Native vegetation should not be cleared if it comprises a high level of biological diversity.
- (b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna.
- (c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.
- (d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.
- (e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.
- (f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.
- (g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.
- (h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.
- (i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.
- (j) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.